

Rosemount™ Smart Pressure Gauge



The Rosemount Smart Pressure Gauge from Emerson™ utilizes industry-proven Rosemount pressure sensor technology to deliver accurate, reliable pressure information. It features 150x or greater overpressure protection and two layers of process isolation providing a safer field environment. Rosemount sensor technology eliminates many gauge challenges by replacing mechanical parts that inhibit traditional gauges from reporting or displaying the correct pressure. The Rosemount Smart Pressure Gauge features a large 4.5-in. (114 mm) face for easy field visibility. It has up to a 10-year installed life, reducing costs and time involved with maintenance.



Product benefits

Meet traditional gauge requirements

- Designed to ASME B40.1 - Grade 2A Accuracy (0.5% of span)
- NPT, DIN, manifold, level flange, and remote seal process connections
- Gauge, absolute, vacuum, and compound measurement types
- Scale ranges from 15 inH₂O (37 mbar) to 4000 psi (275 bar)

Reduce maintenance challenges

- Get up to 10 years of reliable readings through industry-proven Rosemount pressure sensor technology
- Reduce common mechanical gauge failures caused by vibration, overpressure, and other environmental factors
- Have confidence in pressure gauge health with local indicator light

Improve personnel safety

- Keep people out of hazardous areas by minimizing operator rounds
- Gain peace of mind with overpressure ratings from 1.5x to 150x or greater on certain gauges and two layers of process isolation

Ordering information

Table 1: Rosemount Smart Pressure Gauge Ordering Information

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Device type	
SPG	Smart Pressure Gauge	★
Dial size		
45	4.5-in. (114.3 mm)	★
Gauge output		
L	Local HART® terminals for local configuration only	★
Product certifications		
I1	ATEX Intrinsic Safety	★
I5	US Intrinsically Safe	★
I6	Canada Intrinsically Safe	★
I7	IECEX Intrinsic Safety	★
NA	No approval	★
Measurement type		
G	Gage	★
A	Absolute	★

C	Compound		★
V	Vacuum		★
Process connection style⁽¹⁾			
	Connection style	Isolating diaphragm material	★
11	1/2–14 NPT male	316L SST	★
12	1/2–14 NPT male	Alloy C-276	★
21	G1/2 male (EN 837)	316L SST	★
22	G1/2 male (EN 837)	Alloy C-276	★
01	Alternate process connection	316 SST	★
02	Alternate process connection	Alloy C-276	★
Primary engineering unit			
A	psi		★
B	kPa		★
D	bar		★
E	mBar		★
F	MPa		★
G	inH ₂ O		★
H	kg/cm ²		★
I	ftH ₂ O		
J	mmH ₂ O		
K	inHg		★
L	cmH ₂ O		★
M	cmHg		★
N	mmHg		★
p ⁽²⁾⁽³⁾	Percent of range (% of range)		★
Scale ranges			
Six-digit, configurable, numerical value (e.g. 000100 for an upper scale range of 100 with selected engineering unit)			★
Reference tables in Pressure scale ranges on page 5 section for scale ranges by engineering unit.			

(1) *Materials of construction comply with recommendations per NACE® MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.*

(2) *Not available with measurement type compound.*

(3) *Not available with measurement type vacuum.*

Table 2: Options (include with selected model number)

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Secondary engineering unit (dual scale)			
DA ⁽¹⁾	psi		★
DB ⁽¹⁾	kPa		★

DD ⁽¹⁾	bar	★
DH ⁽¹⁾	kg/cm ²	★
DC ⁽²⁾⁽³⁾⁽⁴⁾⁽⁵⁾	Custom units	
Manifolds assemblies⁽⁶⁾⁽⁷⁾⁽⁸⁾		
S5	Assemble to Rosemount 306 Integral Manifold	
Diaphragm seal assembly⁽⁷⁾⁽⁸⁾⁽⁹⁾⁽¹⁰⁾		
S1	Assemble to one Rosemount 1199 Diaphragm Seal	
Extended product warranty		
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★
Mounting bracket		
B4	Bracket for 2-in. pipe or panel mounting, all SST	★
Custom configuration		
C1	Custom configuration	★
Calibration certification		
Q4	Calibration certificate	★
Material traceability certification		
Q8	Material traceability certification per EN 10204 3.1	★
NACE certificate		
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★
Pressure testing		
P1	Hydrostatic testing with certificate	★
Surface finish⁽¹¹⁾		
Q16	Surface finish certificate for Sanitary Remote Seals	★
Normal range indication		
LK	Green, yellow, and red sticker kit	★
Alternate process connection⁽¹²⁾		
P01	Level flange (SST), 1-in. ANSI Class 150	
P02	Level flange (SST), 1-in. ANSI Class 300	
P11	Level flange (SST), 2-in. ANSI Class 150	
P12	Level flange (SST), 2-in. ANSI Class 300	
P21	Level flange (SST), 3-in. ANSI Class 150	
P22	Level flange (SST), 3-in. ANSI Class 300	
P31	Level flange (SST), DIN-DN 50 PN 40	
P41	Level flange (SST), DIN-DN 80 PN 40	
W01	Level flange (SST), 1-in. ANSI Class 150, All welded construction	

W02	Level flange (SST), 1-in. ANSI Class 300, All welded construction	
W11	Level flange (SST), 2-in. ANSI Class 150, All welded construction	
W12	Level flange (SST), 2-in. ANSI Class 300, All welded construction	
W21	Level flange (SST), 3-in. ANSI Class 150, All welded construction	
W22	Level flange (SST), 3-in. ANSI Class 300, All welded construction	
W31	Level flange (SST), DIN-DN 50 PN 40, All welded construction	
W41	Level flange (SST), DIN-DN 80 PN 40, All welded construction	

- (1) Not available with primary engineering unit "P" (percent of range).
- (2) Not available with measurement type compound.
- (3) Not available with measurement type vacuum.
- (4) Requires primary engineering unit of "A" (psi) or "D" (bar).
- (5) Requires custom configuration model code "C1".
- (6) Requires process connection style "11" or "12".
- (7) Integrated manifold and diaphragm seal assemblies cannot be combined.
- (8) "Assemble-to" items are specified separately and require a completed model number.
- (9) Requires process connection 11.
- (10) Seal material and size selection are dependent on desired scale range. When selecting a seal, discuss options with your local Emerson sales representative.
- (11) Requires diaphragm seal assembly "S1".
- (12) Requires process connection style "01" or "02".

Figure 1: Model Number Ordering Example

Model	Dial size	Gauge output	Product certification	Measurement type	Process connection style	Primary engineering unit	Scale range	Options
SPG	45	L	I1	A:	11	A	6-digit numeric value	DA, S1...
Factory defined			End-user defined					

Pressure scale ranges

Additional scale ranges available. Contact Emerson for additional information.

Table 3: PSI

Code	Vacuum -psi to 0	Gage/absolute 0 to psi	Compound ⁽¹⁾ -30 inHg to 0 to psi
000000	-15/0		
000005	5		5
000010	10		10
000015	15		15
000020	20		20
000030	30		30

000050	50	50
000060	60	60
000075	75	75
000100	100	100
000150	150	150
000160	160	160
000200	200	200
000300	300	300
000400	400	N/A
000500	500	N/A
000600	600	N/A
000800	800	N/A
001000	1000	N/A
001500	1500	N/A
002000	2000	N/A
003000	3000	N/A
004000	4000	N/A

(1) Vacuum scale will be in inHg and positive pressure in psi. Only applies to psi.

Table 4: Bar-kg/cm²

Code	Vacuum -bar to 0 or -kg/cm ² to 0	
	Gage/absolute 0 to bar or 0 to kg/cm ²	Compound -1 bar to 0 to bar or -1 kg/cm ² to 0 to kg/cm ²
000000	-1/0	
000000D40	0.4	0.4
000000D60	0.6	0.6
000001	1	1
000001D50	1.5	1.5
000001D60	1.6	1.6
000002	2	2
000002D50	2.5	2.5
000003	3	3
000004	4	4
000005	5	5
000006	6	6
000009	9	9
000010	10	10

000015	15	15
000016	16	16
000020	20	20
000024	24	N/A
000025	25	N/A
000040	40	N/A
000050	50	N/A
000060	60	N/A
000070	70	N/A
000100	100	N/A
000160	160	N/A
000250	250	N/A

Table 5: kiloPascals (kPa)

Code	Vacuum -kPa to 0	
000000	-100/0	
	Gage/absolute 0 to kPa	Compound -100 kPa to 0 to kPa
000040	40	40
000060	60	60
000100	100	100
000150	150	150
000160	160	160
000200	200	200
000250	250	250
000300	300	300
000400	400	400
000500	500	500
000600	600	600
000900	900	900
001000	1000	1000
001500	1500	1500
001600	1600	1600
002000	2000	2000
002400	2400	N/A
002500	2500	N/A

004000	4000	N/A
005000	5000	N/A
006000	6000	N/A
010000	10000	N/A
025000	25000	N/A

Table 6: mbar

Code	Vacuum -mbar to 0	
000000	-1000/0	
	Gage/absolute 0 to mbar	Compound -1000 mbar to 0 to mbar
000400	400	400
000600	600	600
001000	1000	1000
001500	1500	1500
002000	2000	2000
003000	3000	3000
004000	4000	4000
005000	5000	5000
006000	6000	6000
009000	9000	9000

Table 7: MegaPascals (MPa)

Code	Vacuum -MPa to 0	
000000	-0.1/0	
	Gage/absolute 0 to MPa	Compound -0.1 MPa to 0 to MPa
000000D20	0.2	0.2
000000D50	0.5	0.5
000001	1	1
000001D50	1.5	1.5
000002	2	2
000002D50	2.5	N/A

Table 8: inH₂O

Code	Vacuum -inH₂O to 0	
000000	-400/0	
	Gage/absolute 0 to inH₂O	Compound -400 inH₂O to 0 to inH₂O
000200	200	200
000300	300	300
000800	800	800

Table 9: ftH₂O

Code	Vacuum -ftH₂O to 0	
000000	-30/0	
	Gage/absolute 0 to ftH₂O	Compound -30 ftH₂O to 0 to ftH₂O
000035	35	35
000060	60	60
000070	70	70
000100	100	100
000140	140	140
000240	240	240
000400	400	400
000500	500	500
000700	700	700
000900	900	N/A

Table 10: mmH₂O

Code	Vacuum -mmH₂O to 0	
000000	-10000/0	
	Gage/absolute 0 to mmH₂O	Compound -10000 mmH₂O to 0 to mmH₂O
007500	7500	7500
040000	40000	40000
200000	200000	200000

Table 11: inHg

Code	Vacuum -inHg to 0	
000000	-30/0	
	Gage/absolute 0 to inHg	Compound -30 inHg to 0 to inHg
000012	12	12
000015	15	15
000016	16	16
000020	20	20
000030	30	30
000060	60	60
000300	300	300

Table 12: cmH₂O

Code	Vacuum -cmH ₂ O to 0	
000000	-1000/0	
	Gage/absolute 0 to cmH ₂ O	Compound -1000 cmH ₂ O to 0 to cmH ₂ O
000500	500	500
000900	900	900

Table 13: cmHg

Code	Vacuum -cmHg to 0	
000000	-75/0	
	Gage/absolute 0 to cmHg	Compound -75 cmHg to 0 to cmHg
000150	150	150
000750	750	750
004000	4000	N/A
020000	20000	N/A

Table 14: mmHg

Code	Vacuum -mmHg to 0	
000000	-750/0	
	Gage/absolute 0 to mmHg	Compound -750 mmHg to 0 to mmHg
001500	1500	1500
007500	7500	7500
040000	40000	N/A
200000	200000	N/A

Table 15: Percent of range

Scale will read 0-100 percent. Code selected is representative of the desired working pressure range in psi.

Code	Gage/absolute
000030	30
000150	150
000800	800
004000	4000

Specifications

Physical specifications

Material selection

Emerson provides a variety of Rosemount products with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.) when specifying product materials, options, and components for the particular application. Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product options, configuration, or materials of construction selected.

Dial size

4.5-in. (114.3 millimeter)

Scale ranges

From vacuum up to 4,000 psi (275 bar)

Single scale considerations

The number of major graduations is a direct result of the specified combination of primary engineering unit and scale range.

Dual scale considerations

The number of major graduations on the inner scale is the direct result of the combination of primary engineering unit and secondary engineering unit.

Process connections

1/2-14 NPT male, G1/2 male (EN 837) and alternate process connections.

Field Communicator connections

Communication terminals are accessible by removing cover.

Material of construction

Housing

Engineered Polymer, NEMA® 4X and IP66/67

Cover O-ring

Silicone rubber

Process-wetted parts

316L SST, Alloy C-276

Shipping weight

1.8 lb (0.82 kg)

Options

- Mounting bracket (Code B4): 1.0 lb (0.5 kg)
- Normal Range Indication (Code LK): 0.02 lb (11 g)
- Rosemount 1199 Seal Systems: Reference the [Rosemount DP Level Product Data Sheet](#) for shipping weights.
- Rosemount 306 Integrated Manifolds: Reference the [Rosemount Manifolds Product Data Sheet](#) for shipping weights.

Operating specifications

Accuracy

ASME B40.1 – Grade 2A (0.5% of span)

ASME B40.1 – Grade 3A (1.0% of span) for spans less than 40 inH₂O

Temperature limits

Ambient

–40 to 185 °F (–40 to 85 °C)

Storage

–40 to 185 °F (–40 to 85 °C)

Process

–40 to 250 °F (–40 to 121 °C)

Note

Process temperatures above 185 °F (85 °C) require de-rating the ambient limits by a 1.5:1 ratio.

Note

220 °F (104 °C) limit in vacuum service; 130 °F (54 °C) for pressures below 0.5 psia.

Options

Normal Range Indication (Code LK)

- Ambient: -40 to 185 °F (-40 to 85 °C)
- Storage: 70 °F (21 °C)
- Application: Minimum of 50 °F (10 °C)

Electrical connections/battery

The Rosemount Smart Pressure Gauge has a replaceable, non-rechargeable, 3.6 V primary cell, lithium-thionyl chloride battery.

A battery at reference conditions has a lifespan of 10 years. Gauges with a span of less than 5 psi will experience a decrease in battery life. Low-pressure range gauges can be more susceptible to environmental effects.

Note

Reference conditions for the pressure gauge are 70 °F (21 °C) and stable operating pressure with periodic changes.

Overpressure limit

Scale range	Maximum working pressure	Maximum overpressure limit
0.55 – 30 psi (0.038 – 2 bar)	30 psi (2 bar)	750 psi (51.7 bar)
31 – 150 psi (2.1 – 10.3 bar)	150 psi (10.3 bar)	1,500 psi (103.4 bar)
151 – 800 psi (10.4 – 55.1 bar)	800 psi (55.1 bar)	1,600 psi (110.3 bar)
801 – 4,000 psi (55.2 – 275 bar)	4,000 psi (275 bar)	6,000 psi (413.7 bar)

Burst pressure limit

11,000 psi (758 bar)

Minimum span limits for percent of range engineering unit

The pressure gauge represents the pressure as a percent. You can modify the representative scale range to better accommodate your application. By default, "100" represents the maximum pressure limit.

Code	Maximum scale range	Scale range for 0.5% of span accuracy	Scale range for 1.0% of span accuracy
000030	30 psi	30 - 5 psi	4.99 - 3 psi
000150	150 psi	150 - 25 psi	24.99 - 15 psi
000800	800 psi	800 - 134 psi	133.99 - 80 psi
004000	4000 psi	4000 - 667 psi	666.99 - 400 psi

Ambient temperature effect per 18 °F (10 °C)

Scale range	Ambient temperature effect
Smart pressure gauge	

Scale range	Ambient temperature effect
60 inH ₂ O (0.15 bar) to 4000 psi (275 bar)	±0.3% of span
Smart pressure gauge with remote seal	
Up to 4,000 psi (275 bar)	See Instrument Toolkit software.

Digital zero trim

Digital zero trim is an offset adjustment to compensate for mounting position effects (up to 5% of span).

Humidity limits

0-95% relative humidity

Electromagnetic compatibility (EMC)

The Rosemount Smart Pressure Gauge meets all industrial environment requirements specified by the EN 61326 and NE21 electromagnetic compatibility (EMC) requirements. During an EMC event, the maximum scale range deviation is < 1% for scale ranges greater than 5psi. For scale ranges less than 5psi, the maximum deviation < 10%.

Note

During an ESD event, the pressure gauge might exceed the EMC deviation limit or reset. The pressure gauge will automatically recover and return to normal operation.

Status indication

Device status is indicated by local LED. Reference the [Rosemount Smart Pressure Gauge Quick Start Guide](#) for further detail.

Vibration effect

No significant effect when tested per IEC60770-1 or ASME B40.1 requirements

IEC60770-1 high vibration level - field or pipeline: 10–60 Hz 0.21 mm displacement peak amplitude/60–2000 Hz 3 g

Product certifications

Rev: 2.1

European Union directive information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.com/Rosemount.

Ordinary location certification from CSA

The product has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by CSA, a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Installing in North America

The US National Electrical Code (NEC®) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

USA

15 U.S.A. Intrinsically Safe (IS)

Certificate: [CSA] 70047656

Standards: FM 3600 – 2011, FM 3610 – 2010, UL Standard 50 – Eleventh Edition, UL 61010-1 – 3rd Edition, ANSI/ISA-60079-0 (12.00.01) – 2013, ANSI/ISA-60079-11 (12.02.01) – 2013, ANSI/IEC 60529 – 2004

Markings: IS CLI, DIV 1, GP A, B, C, D T4; Class 1, Zone 0, AEx ia IIC T4 Ga; T4 (-40 °C ≤ T_a ≤ +70 °C) when installed per Rosemount drawing 00G45-1020; Type 4X; IP66/67

Special Conditions for Safe Use (X):

1. Do not replace battery when explosive atmosphere is present.
2. Use only 00G45-9000-0001 batteries.
3. The surface resistivity of the housing is greater than 1G . To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.
4. Substitution of components may impair intrinsic safety.

Canada

16 Canada Intrinsically Safe (IS)

Certificate: [CSA] 70047656

Standards: CAN/CSA C22.2 No. 0-10, CAN/CSA C22.2 No. 94-M1991 (R2011), CAN/CSA-60079-0-11, CAN/CSA-60079-11-14, CSA Std C22.2 No. 60529-05, CAN/CSA-C22.2 No. 61010-1-12

Markings: Intrinsically Safe for Class I, Division 1, Groups A, B, C, D T4; Ex ia IIC T4 Ga T4 (-40 °C ≤ T_a ≤ +70 °C) when installed per Rosemount drawing 00G45-1020; Type 4X; IP66/67

Special Conditions for Safe Use (X):

1. Do not replace battery when explosive atmosphere is present.
Ne pas remplacer les accumulateurs si une atmosphère explosive peut être présente.
2. Use only 00G45-9000-0001 batteries. Utiliser uniquement des accumulateurs 00G45-9000-0001.
3. The surface resistivity of the housing is greater than 1G . To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.
La résistivité de surface du boîtier est supérieure à un gigaohm. Pour éviter l'accumulation de charge électrostatique, ne pas frotter ou nettoyer avec des produits solvants ou un chiffon sec.
4. Substitution of components may impair intrinsic safety.
La substitution de composants peut compromettre la sécurité intrinsèque.

Europe

I1 ATEX Intrinsic Safety

Certificate:	Baseefa16ATEX0005X
Standards:	EN 60079-0: 2012 + A11: 2013, EN 60079-11: 2012
Markings:	ⒺII 1 G Ex ia IIC T4 Ga, T4 (-40 °C ≤ T _a ≤ +70 °C) IP66/67

Special Conditions for Safe Use (X):

1. The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The measured capacitance between the equipment enclosure and metallic inline sensor module is 4.7pF. This must be considered only when the WPG is integrated into a system where the process connection is not grounded.
3. Do not change the battery when an explosive atmosphere is present.
4. Only replace battery with Rosemount Part No. 00G45-9000-0001.

International

I7 IECEx Intrinsic Safety

Certificate:	IECEx BAS 16.0012X
Standards:	IEC 60079-0: 2011, IEC 60079-11: 2011
Markings:	Ex ia IIC T4 Ga, T4 (-40 °C ≤ T _a ≤ +70 °C) IP66/67

Special Conditions for Safe Use (X):

1. The plastic may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The measured capacitance between the equipment enclosure and metallic inline sensor module is 4.7pF. This must be considered only when the WPG is integrated into a system where the process connection is not grounded.
3. Do not change the battery when an explosive atmosphere is present.
4. Only replace battery with Rosemount Part No. 00G45-9000-0001.

Brazil

I2 INMETRO Intrinsic Safety

Certificate:	UL-BR 16.0826X
Standards:	ABNT NBR IEC 60079-0:2008 + Errata 1:2011, ABNT NBR IEC 60079-11:2009
Markings:	Ex ia IIC T4 Ga, T4 (-40 °C ≤ T _a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

Japan

I4 TIIS Intrinsic Safety (Only available with the WPG)

Certificate:	TC22068X
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Markings: Ex ia IIC T4 Ga, T4 (-40 °C ≤ T_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

EAC - Belarus, Kazakhstan, Russia

IM Technical Regulation Customs Union (EAC) Intrinsic Safety (Only available with the WPG)

Certificate: TC RU C-US.AA87.B.00372

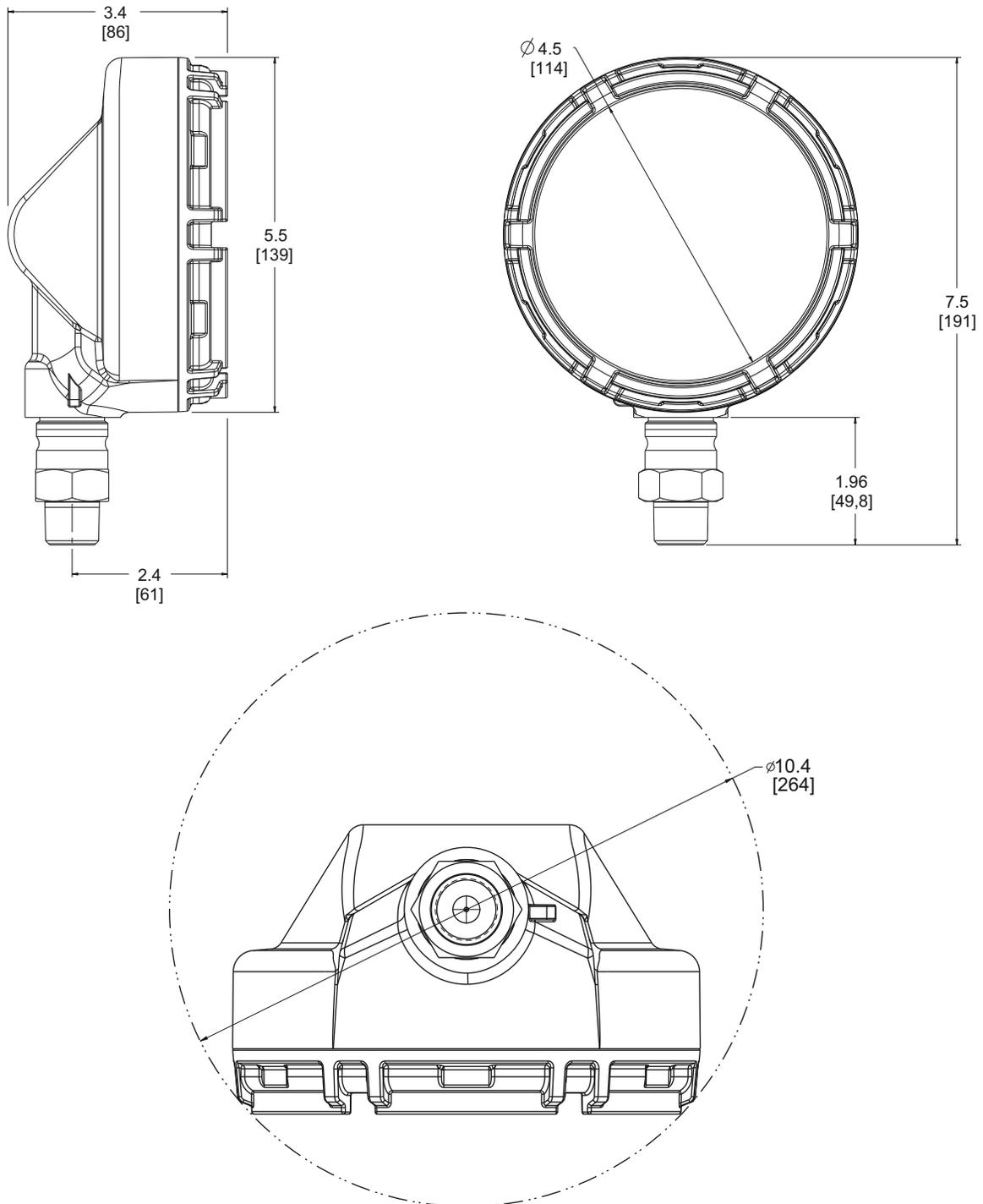
Markings: 0Ex ia IIC T4 Ga X, T4 (-40 °C ≤ T_a ≤ +70 °C) IP66/67

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

Dimensional drawings

Figure 2: Rosemount Smart Pressure Gauge



Dimensions are in inches (millimeters).

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